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July 23, 2004

Mail Stop Appeal Brief-Patents  
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P.O. Box 1450  
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Re: Appellant: Gwo Shin Swei  
Application No.: 09/810,641 Filed: March 16, 2001  
Confirmation No.: 7390  
Title: Perforated Sanding Disk  
Docket No.: 3090.1006-000 (D-4062)

Sir:

Transmitted herewith are three (3) originally signed copies of a Brief on Appeal for filing in the subject application. The Brief on Appeal is filed pursuant to the Notice of Appeal received by the U.S. Patent and Trademark Office on May 26, 2004.

1. ☐ Appellant hereby petitions to extend the time for filing a Brief on Appeal for ☐ month(s) from ☐ to ☐.
2. ☐ A ☐ month extension of time to extend the time for filing a Brief on Appeal from ☐ to ☐ was filed on ☐ with payment of a \$☐ fee.  
☐ Appellant hereby petitions for an additional ☐ month extension of time for filing a Brief on Appeal from ☐ to ☐.
3. ☐ A Request for Oral Hearing before the Board of Patent Appeals and Interferences is being filed concurrently herewith.

## 4. Fees are submitted for the following:

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	Balance of fee due	\$	0
<input checked="" type="checkbox"/>	Brief on Appeal	\$	330
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	TOTAL	\$	330

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Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

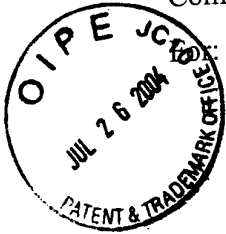
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Dated: July 23, 2004  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant: Gwo Shin Swei  
Application No.: 09/810,641 Group: 3723  
Filed: March 16, 2001 Examiner: R.A. Rose  
Confirmation No.: 7390

PERFORATED SANDING DISK



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BRIEF ON APPEAL

Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

This Brief on Appeal is submitted pursuant to the Notice of Appeal received in the U.S. Patent and Trademark Office on May 26, 2004, and in support of the appeal from the final rejection set forth in the Office Action mailed on February 24, 2004. The fee for filing a brief in support of an appeal is enclosed.

I. REAL PARTY IN INTEREST

The real party in interest is Saint-Gobain Abrasives, Inc., of One New Bond Street, Worcester, Massachusetts 01615-0138.

## II. RELATED APPEALS AND INTERFERENCES

Appellants, the undersigned Attorney, and the Assignee are not aware of any related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

## III. STATUS OF CLAIMS

Claims 1 through 8 have been finally rejected, and a copy of the claims, as they are currently pending, appears in the Appendix of this Brief. The rejection of Claims 1 through 8 is being appealed.

## IV. STATUS OF AMENDMENTS

Claims 2-4, 6, and 7 appear as originally filed. Claim 1 was amended in the Amendment filed on November 24, 2003. Claim 8 was submitted in the Amendment filed on November 24, 2003. Claim 5 was amended in the Amendment After Final Rejection Under 37 C.F.R. § 1.116, filed on May 11, 2004, and the amendment was entered according to the Advisory Action mailed from the U.S. Patent and Trademark Office on June 29, 2004. The claims as presently entered are included in the copy of the claims in the Appendix of this Brief.

## V. SUMMARY OF INVENTION

The invention relates to abrasive disks for use with orbital sanders which are designed for use with integral vacuum exhaust systems. Page 1, lines 4 and 5. Orbital sanders can generate a large amount of dust, particularly when used on wood, polymer composites, unmodified plastics, or painted surfaces. Page 1, lines 5 through 7. Many manufacturers sell orbital sanders with integral or readily attachable vacuum exhaust systems designed to evacuate the dust as it is formed. Page 1, lines 9 and 10. A vacuum is applied to the back of a support pad to which the disk is attached, and the vacuum evacuates dust through holes provided in the disc and pad. Page 1, lines 10 through 13. However, there is a problem in that the pattern of exhaust holes in the pads is not standardized, so an abrasive disc intended for use with one particular model of sander will not fit a model from another manufacturer. Page 1, lines 14 through 16. For example, some models have five exhaust holes in the pad, while others have eight. Page 1, lines 16 through 18.

One prior art attempt to address this problem used discs having a multitude of perforations across the disc's surface. Page 1, lines 23 through 27. This approach sacrifices a good deal of effective grinding surface and requires a backing with sufficient porosity to allow passage of swarf without becoming prematurely clogged. Page 1, lines 27 through 29. A second approach used a disc with eight enlarged holes. Page 1, lines 30 and 31. The enlarged holes are sufficiently large enough so that they can be aligned with the holes of either a five- or eight-hole sander. Page 1, line 31, through page 2, line 3. However, this second approach requires a user to align the disc on the pad, and it has been found that users wish to change a disc without having to look at the how the disc is orientated on the pad. Page 2, lines 3 through 6.

Appellant's invention addresses these problems by providing a circular abrasive disc having a major abrading surface that includes perforations located exclusively within an annular zone. Page 3, lines 12 through 20. The perforations are essentially uniformly spaced within the zone such that the distance between any pair of adjacent perforations is less than twice the greatest dimension of either perforation. Page 3, lines 12 through 20. At least two perforations are in register with each exhaust port on an orbital sander. Page 3, lines 24 through 27. The annular zone is located where the exhaust ports are situated on a typical orbital sander with a vacuum device. Page 3, lines 21 through 24. As such, the perforations can cooperate with the vacuum device in order to remove swarf from a surface of a workpiece. Page 3, lines 12 through 20. Furthermore, there is no need to orient Appellant's discs in any specific manner because the distribution and size of the perforations ensure that at least two are in register, and several others are in close proximity, with each exhaust port. Page 2, lines 24 through 27.

## VI. ISSUES

The first issue is whether Claims 1-5, 7, and 8 are properly rejected under 35 U.S.C. § 103 over the teachings of U.S. Patent 5,810,650, issued to Jöst, in view of U.S. Patent 4,184,291, issued to Marton, when the Examiner has not established a *prima facie* case of obviousness and the combined teachings of those two references do not teach or suggest at numerous characteristics of Appellant's claimed invention.

The second issue is whether Claim 6 is properly rejected under 35 U.S.C. § 103 over the teachings of Jöst in view of Marton and further in view of U.S. Patent 5,309,682, issued to

Gutknecht, *et al.*, when the Examiner has not established a *prima facie* case of obviousness and the combined teachings of those three references do not teach or suggest at least seven characteristics of Appellant's claimed invention.

## VII. GROUPING OF CLAIMS

With respect to the first issue, Claims 1-5, 7, and 8 comprise two separate groups. Claims 1-5 and 7 form Group I and are directed to an abrasive disc. Claim 8 forms Group II and is directed toward an orbital sander system. As such, the broadest claim of Group I (i.e., Claim 1) claims an invention with a different scope than that claimed by the sole claim of Group II.

With respect to the second issue, Claim 6 stands or falls on its own.

## VIII. ARGUMENT

The Examiner rejected Claims 1-5, 7, and 8 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,810,650, issued to Jöst, in view of U.S. Patent 4,184,291, issued to Marton. Claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Jöst in view of U.S. Patent 5,309,682, issued to Gutknecht, *et al.*

In the Office Action mailed on February 24, 2004, the Examiner stated that Jöst disclosed an abrasive disk for use with a suction-type apertured backup pad comprising a plurality of uniformly spaced perforations, at least some of which overlie the apertures in the pad to allow the disk to be placed randomly on the pad while still allowing suction passageways to remain open to draw dust through the pad. The Examiner also stated that the distribution of the perforations across the disk taught by Jöst does not appear to be critical and only perforations that lie within the annular region bounded by the pad apertures would be capable of delivering dust through the apertures, thus any holes located outside of this annular region are non-functional with respect to suction capability, and thus the particular range of holes would have been an obvious matter of design choice to those of ordinary skill in the art.

The Examiner cited Marton as teaching an abrasive disk for use with a sanding device, the sanding device comprising an array of apertures formed by a screen or a grid. The Examiner states that the array of apertures are intended to underlie exhaust ports of a pad and allow suction to draw dust and debris from the surface being sanded. The Examiner contends that it is clear

from the drawings that the apertures are considerably smaller in size than the exhaust ports to the extent that at least two apertures in the screen would be in register with each exhaust port. The Examiner believes that, in view of these teachings of Marton, it would have been obvious to provide a hole spacing in the tool of Jöst such that at least two apertures are in register with each respective exhaust port to ensure adequate suction.

The Examiner further cited Gutknecht, *et al.* as teaching the alternative use of hook-and-loop or adhesive fastening of an abrasive disk to a backup pad. The Examiner believes that it would have been obvious to combine the teachings of Gutknecht, *et al.* with Jöst and Marton to use conventional hook-and-loop type or adhesive fastening means for temporary removal or repositioning of the disk on a backup pad.

In response to the Examiner's rejection and statements, the Appellant noted that there are at least seven characteristics recited in Claim 1 which Jöst and Marton do not teach or suggest, either separately or in combination, including:

1. an annular zone,
2. an annular zone that is a radial distance from the center of the disk from of one-third to one-half of the radius of the disk,
3. an annular zone that is a radial distance from the circumference of the disk from one quarter to one third the radius of the disk,
4. perforations exclusively within an annular zone, each having a diameter less than one quarter the width of the annular zone,
5. perforations that are essentially uniformly spaced in an annular zone,
6. perforations in an annular zone with a distance between any pair of adjacent perforations is less than twice the greatest dimension of either perforation, and
7. at least two perforations of an annular zone in register with each exhaust port on an orbital sander.

The Examiner dismissed the first three characteristics, stating that the distribution of the perforations across the disks taught by Jöst does not appear to be critical because only perforations lying within the annular region would be capable of delivering dust through apertures of a pad. The Examiner believes that any holes located outside of the annular region are non-functional with respect to suction capability. The Examiner relies on *In re Nelson*, 95

U.S.P.Q. 82 (C.C.P.A. 1952) for the proposition that the removal of a structure with a consequent loss of that structure's function is considered an obvious matter of design choice. The Examiner contends that the removal of non-functional suction apertures lying outside of an area encompassed by the suction passageways would have been no more than an obvious matter of design choice. The Examiner further contends that such modification would not destroy the utility of the device and would require less effort in the manufacture of the disk.

The Appellant disagrees and respectfully submits that the proposition from *Nelson* (i.e., the removal of structure with a consequent loss of its function is considered an obvious matter of design choice) is inapposite to the present matter, as the elimination of the apertures of Jöst is not a "removal," as characterized by Examiner, but rather a *replacement*. In order to modify the teachings of Jöst in the way suggested by the Examiner, non-abrasive apertures must be replaced with additional abrasive surface area, thereby providing additional functionality (i.e., additional abrading). As the Examiner's proposed modification would result in the disc having new structures with additional functions, the proposition in *Nelson* is inapplicable to the present matter.

The Appellant further submits that the Examiner has not established a *prima facie* case of obviousness. To properly reject claims in an application under 35 U.S.C. § 103, the Examiner must show an unrebutted *prima facie* case of obviousness. *In re Rouffet*, 149 F.3d 1350, 1354, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998); *In re Deuel*, 51 F.3d 1552, 1557, 34 U.S.P.Q.2d 1210, 1214 (Fed. Cir. 1995). It is well settled law that when an obviousness rejection is made based upon a combination of prior art references, there must be some teaching, suggestion, or motivation to combine or modify the prior art in the way proposed by the Examiner. *In re Rouffet*, 149 F.3d at 1355, 47 U.S.P.Q.2d at 1456; *In re Mayne*, 104 F.3d 1339, 1342, 41 U.S.P.Q.2d 1451, 1454 (Fed. Cir. 1997); *In re Geiger*, 815 F.2d 686, 688, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987). In other words, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the modification and/or combination. *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1316-17 (Fed. Cir. 2000); *In re Rouffet*, 47 U.S.P.Q.2d at 1456; *In re Beattie*, 974 F.2d 1309, 1311-12, 24 U.S.P.Q.2d 1040, 1042 (Fed. Cir. 1992).



The suggestion or motivation must be found within the prior art and may not be based upon applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991) (emphasis added). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *See In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). In order to prevent the use of hindsight to defeat patentability of the invention, the Federal Circuit Court of Appeals requires that the examiner identify some suggestion to combine references or make the proposed modification. *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351, 60 U.S.P.Q.2d 1001, 1008 (Fed. Cir. 2001); *In re Rouffet*, 149 F.3d at 1357, 47 U.S.P.Q.2d at 1457-58. *See also In re Mayne*, 104 F.3d at 1341, 41 U.S.P.Q.2d at 1454. Furthermore, the prior art references must teach or suggest *all* the claim limitations. *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 164 (Fed. Cir. 1985).

The Examiner has not provided any suggestion or motivation to modify the teachings of Jöst to produce a disc having perforations solely in an annular zone. The Examiner simply stated that removing non-functional suction apertures would result in a decrease in the amount of effort needed in manufacturing the discs. The Examiner did not cite any prior art showing that those of ordinary skill in the art would come to such a conclusion. In fact, the Examiner did not even reference any support that such a conclusion is correct. Without such references, the Examiner's contentions fall far short of establishing a *prima facie* case of obviousness and has improperly based his suggested modification of the prior art on hindsight of Appellant's invention.

It is not necessarily true that removing non-functional suction apertures would result in a decrease in the amount of effort needed in manufacturing the discs. To the contrary, producing apertures only within a defined region can take more effort than producing discs having apertures over the entire surface of the disc. For example, confining apertures to an annular region on a disc can necessitate a more advanced stamping pattern and/or the disc may have to be aligned in a more sophisticated manner than if the apertures were simply produced over the entire surface of the disc. Also, such a manufacturing process can require more expensive machinery and/or result in a higher percentage of discs being rejected due to manufacturing irregularities. Hence, one skilled in the art would not be motivated to eliminate some of the apertures of the discs taught in Jöst in order to reduce the amount of manufacturing effort required. In fact, the additional effort

needed to produce such discs would teach away from modifying the teachings of Jöst in the way proposed by the Examiner.

Furthermore, even if there were a motivation to combined the teachings of Jöst and Marton, that combination still does not teach or suggest an annular zone as recited in Appellant's claimed invention. In fact, such a combination would teach away from a disc having perforations exclusively within an annular zone. As shown in Figure 1 of Marton, the exhaust ports of the sanders taught in Marton are not located in an annular zone, but are situated at various locations across the entire surface of the pad. One skilled in the art would not have been motivated to replace some of the perforations on the discs taught in Jöst with additional abrading surface so as to form a disc having perforations within an annular zone, yet alone an annular zone that is confined to the particular dimensions recited in Appellant's claimed invention. Indeed, one skilled in the art would have been taught away from such a replacement as it would reduce the suction from a portion of the exhaust ports on the pads taught in Marton.

With respect to the first issue of this appeal, Jöst and Marton do not teach or suggest, either separately or in combination, the following claim limitations that are all recited in Claim 1:

1. an annular zone,
2. an annular zone that is a radial distance from the center of the disk from of one-third to one-half of the radius of the disk,
3. an annular zone that is a radial distance from the circumference of the disk from one quarter to one third the radius of the disk,
4. perforations exclusively within an annular zone, each having a diameter less than one quarter the width of the annular zone,
5. perforations that are essentially uniformly spaced in an annular zone,
6. perforations in an annular zone with a distance between any pair of adjacent perforations is less than twice the greatest dimension of either perforation, and
7. at least two perforations of an annular zone in register with each exhaust port on an orbital sander.

Also with respect to the first issue on appeal, Jöst and Marton do not teach or suggest, either separately or in combination, the following limitations recited in Claim 8:

1. a major abrading surface provided with an annular zone,

2. an annular zone having a plurality of perforations, and
3. a sufficient plurality of perforations so that at least two perforations are in register with each exhaust port on the backing pad of an orbital sander.

With respect to the second issue on appeal, the Examiner fails to provided any motivation to combine the teachings of Gutknecht, *et al.* with the teachings of Jöst and Marton. Even if there was motivation to combine the teachings, such a combination would not teach or suggest the invention of Claim 8, as Gutknecht does not remedy the deficiencies in the teachings of Jöst and Marton.

In view of these comments, Appellant respectfully asserts that all pending claims meet the requirements of 35 U.S.C. § 103.

#### CONCLUSIONS

For the reasons presented in this Brief, Appellant respectfully submits that all of the claims in this Application are in condition for allowance. The grounds for rejection are not legally sound and should be withdrawn.

Respectfully submitted,

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Date: July 23, 2004  
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APPENDIXCurrently Pending Claim Listing

1. An abrasive disc for use with an orbital sander fitted with a dust extraction system having a plurality of exhaust ports on said orbital sander, comprising:  
a circular abrasive disc having a major abrading surface provided with an annular zone, intermediate between the center and the circumference of the circular disc wherein the radial distance from the center of the disc to the annular zone is from one third to one half of the radius of the disc and the radial distance from the circumference of the disc to the zone is from one quarter to one third the radius of the disc, and, exclusively within the annular zone, a plurality of perforations, each having a diameter less than one quarter the width of the annular zone and being essentially uniformly spaced in the zone such that the distance between any pair of adjacent perforations is less than twice the greatest dimension of either perforation and at least two perforations are in register with each exhaust port on an orbital sander.
2. An abrasive disc according to Claim 1 wherein the annular zone has a radial width that is from a quarter to a third of the radius of the disc.
3. An abrasive disc according to Claim 2 wherein the perforations have a greatest dimension that is less than one quarter of the radial width of the annular zone.
4. An abrasive disc according to Claim 1 wherein there are from 4 to 40 perforations per square inch within the annular zone.
5. An abrasive disc according to Claim 1 wherein the disc has an abrasive-bearing side and a reverse side and the reverse side is provided with means to attach the disc to a backup pad.

6. An abrasive disc according to Claim 5 in which the means for attaching the disc to a backup pad is selected from a hook and loop attachment pair and a pressure-sensitive adhesive.
7. An abrasive disc according to Claim 5 in which a porous layer permeable to swarf generated during use is attached directly to the reverse side of the abrasive disc.
8. An orbital sander system comprising:
  - an orbital sander fitted with a dust extraction system having about five to eight exhaust ports on a backing pad; and
  - a circular abrasive disc having a major abrading surface provided with an annular zone having a sufficient plurality of perforations so that wherein at least two perforations are in register with each exhaust port on said backing pad of said orbital sander.